

AMENDMENTS TO THE SPECIFICATION

Please replace the Abstract of the present application with the following Abstract:

~~A physical layer protocol is added to~~Method and apparatus for retrieving ~~retrieve the~~
~~in-band downstream ADSL channel frequency response $H(f)$, the noise $N(f)$,~~
measured at initialization and the signal to noise ratio $SNR(f)$ measured at show time
on a per bin basis, in the upstream or downstream direction. ~~Additionally retrieval of~~
~~similar in-band information may be provided in the upstream direction. The~~
~~definition of the message protocol for retrieving during show time the following~~
~~ATU-R information on a per bin basis: In-band channel frequency response per bin~~
 ~~$HR(f)$ measured during the initialization referred back to the receiver tip and ring~~
~~copper pair by the ARU-R; In-band noise estimation per bin $NR(f)$ during the~~
~~initialization referred back to the receiver tip and ring copper pair by the ATU-R; and~~
~~the signal-to-noise ratio per bin $SNRR(f)$ during show time referred back to the~~
~~receiver tip and ring copper pair by the ATU-R. The values of $SNRR(f)$ should be~~
~~updated as they change. An addition of the programming interface in the ADSL~~
~~ATU-C chipset level makes similar information available for the upstream direction,~~
~~that is $N_e(f)$, $N_c(f)$ and $SNRC(f)$. Initialization $H(f)$ can be is used for analyzing the~~
~~physical copper loop condition between tip and ring. Initialization $N(f)$ can be is used~~
~~for analyzing the crosstalk. Showtime $SNR(f)$ can be is used for analyzing time~~
~~dependent changes in crosstalk levels and line attenuation. (such as due to moisture).~~
~~The combination of $H(f)$, $N(f)$ and $SNR(f)$ can be used for trouble shooting why the~~
~~data rate cannot reach~~allows analysis of the line conditions for reaching the maximum
data rate of a given loop, scheduling maintenance and plant update.